APPENDIX D

I-PLAN

for

HYDROGRAPHY

HYDROGRAPHY IMPLEMENTATION PLAN

1. EXECUTIVE SUMMARY

Idaho presently maintains a statewide spatial coverage of hydrography at the scale of 1:100,000. Over 85 percent of the state also exists as part of the high resolution National Hydrography Dataset (NHD). This document details the importance of completing a statewide, seamless spatial representation of surface water at a scale of 1:24,000. Other important components are maintenance of the existing data model, latitude/longitude identifier, and the creation of a link between our existing data and the high resolution NHD. Many organizations are working toward a common dataset, for use statewide, by local, state, and federal government agencies, as well as the private sector. This model will allow data sharing and ensure a common spatial reference. This, in turn, will lower the long-term costs associated with data discrepancies among organizations.

2. DESCRIPTION

2.1 Theme Description

Two hydrography datasets exist in Idaho. The first, the Pacific Northwest River Reach data, was created in the early 1990s. Several organizations participated in generating a 1:100,000 scale streams coverage for the Columbia River Basin. The dataset included any hydrographic feature displayed on a USGS 1:100,000 quadrangle map. The Idaho Department of Fish and Game (IDFG) assigned names, and the Idaho Department of Water Resources (IDWR) checked flow direction, connectivity, centerlines and geometry. This dataset was then sent to USGS Portland, where it was incorporated into a basin wide dataset. Streamnet assumed the custodian role, added a latitude/longitude identifier (LLID) for stream reaches and attached fisheries data provided by the states. Many organizations in the region use this route model to attach other data to this hydrography layer.

The National Hydrography Dataset (NHD) is based on the US Geological Survey (USGS) Digital Line Graph (DLG) hydrography data integrated with reach-related information from the EPA Reach File Version 3 (RF3). The 1:100,000 scale NHD exists nationwide. Many states are involved in creating high resolution, or 1:24,000 scale, NHD. Seventy-three of Idaho's 84 hydrologic units are scheduled for inclusion in this dataset. Presently the USGS has no plans to convert the remaining hydrologic units.

Since water does not stop at the state line, Idaho must coordinate with neighboring states. Utah hired a private contractor to convert most of the state to the high resolution NHD. They have also photorevised their 1:24,000 hydrography. Wyoming plans to adopt the NHD. Very little work has been done in northern Nevada. Montana plans to use the NHD. However, they, like Oregon and Washington, have data tied to LLID. Washington and Oregon are working together to design a crosswalk between the NHD and the LLID. At this time, they have no plans to convert to the NHD.

2.2 Vision Statement

There is a readily available, seamless statewide digital dataset of surface hydrography at the 1:24,000 scale that links the NHD and Idaho's existing LLID data.

2.3 Interdependencies

Several other datasets rely on a complete and accurate hydrography layer. The 5th- and 6th-field watersheds use hydrography to help delineate basins. It is essential that hydrography be contained entirely within watersheds. Pour points for watersheds must coincide with stream confluences. Transportation also must account for streams and canals for planning. Elevation data is useful for determining the direction of flow for stream networks. Public land survey lines often exist along the banks of double-banked streams.

3. BENEFITS AND RISKS

3.1 Benefits and Driving Issues

Water, and the impact of its supply, continues to be an issue in Idaho. Planners use stream data for the Idaho State Water Plan. Statewide water quality and flooding have a direct impact on habitat, fisheries, and power generation. The NHD provides a common statewide theme allowing data exchange and analysis among state agencies.

3.2 Risk Analysis

In completing the high-resolution NHD for Idaho, we will have a seamless dataset for the state. Line work does exist for the 16 remaining hydrologic units; however, they do not contain routing information provided by the NHD, nor will they have the information provided by the Geographic Names Information System (GNIS). The remaining hydrologic units include the Lower Snake River beginning with the confluence with the Boise River until it leaves the state. Several hydrologic units along the border with Nevada are also not included. The NHD model does not have a placeholder for the LLID identifier, so work would have to be done to access attribution linked to LLID on the NHD model.

4. INVENTORY

Authors
IDWR participated in creating the 1:100,000 scale Pacific Northwest River Reach data. IDFG had the responsibility of naming streams. Other major authors include: Idaho Department of Lands (IDL), Bureau of Land Management (BLM), USGS, and US Forest Service (USFS). The NHD is primarily a USGS product although source data has been received from states and USFS.

Stewards
IDWR will assume the roll of data integrator for the High Resolution (HR) NHD. Any changes submitted by stakeholders will be incorporated through the department. IDFG will remain the Steward of the LLID.

A request for data stewards has been an important part of the 5th- and 6th-field watershed delineation. Many of these same stewards may participate in the maintenance and updating of the same hydrologic unit.

Integrator

Idaho Department of Water Resources.

Enhancers

IDFG will enhance fisheries data. Other agencies, including counties, may contribute as the data becomes available and used.

Consumers

Consumers include anyone interested in using surface hydrography. In the past this has included USFS, BLM, IDL, IDFG, Idaho Department of Transportation (ITD), and the Idaho Legislature. Other organizations include Idaho counties, timber companies, private environmental firms, and law firms. Occasionally individuals outside the state request hydrography data for research.

4.2 Data Sources

Several organizations have made contributions to the existing hydrography dataset in Idaho. These include IDL, several national forests, BLM, and IDWR.

The primary sources for both the 1:100,000 and 1:24,000 hydrography are the DLGs produced by the EPA and the USGS. The DLGs were derived the USGS quad maps. Another important data source for the HR is the Cartographic Feature Files created by USFS.

4.3 Status

As stated above, 14 hydrologic units have not been converted to the NHD. Since there is no money presently available at the federal level to complete this task, Idaho will need to convert the data or hire a contractor to finish. Any remaining hydrologic units slated for conversion with USFS money should be available by July 2003.

4.4 Business Needs

Spatial attributes are an integral part of environmental planning. IDFG use hydrography to attach fisheries and habitat data. State law requires state water plans for individual basins. Other uses include flood modeling, stream flow analysis, transportation planning, recreation, and water quality.

4.5 Challenges

There is no effective crosswalk between the NHD and the LLID. This prevents the existing fisheries database from being integrated with the updated names and routing system. The two must be linked in order to make use of the data at the higher resolution scale and to be consistent with neighboring states.

5. STANDARDS

Standards for the HR NHD are available in a document published in July 1999 entitled, *Standards for National Hydrography Dataset - High Resolution*, available at: http://rmmcweb.cr.usgs.gov/public/nmpstds/acrodocs/draft/dlg-f/nhd/NHDH0799.PDF.

The Pacific Northwest River Reach standards are posted on: http://www.streamnet.org/pnwr/PNWNAR.html

6. IMPLEMENTATION STRATEGY

6.1 Implementation Approach

Any hydrography updates must include a crosswalk between the NHD and the LLID. The impact of fisheries within the state has been and will continue to be significant. Without a mechanism for transferring data from one system to the other, we risk losing opportunities for using the LLID data. Idaho is not alone in this problem. Oregon, Washington, and Montana also need a method for linking the two datasets.

6.2 Implementation Team

IDWR will have the responsibility for integrating updates to the NHD. Any changes will be posted on INSIDE Idaho.

6.3 Data Development

A statewide data layer must include complete and seamless 1:24,000 hydrography. Priorities include completing missing DLGs as a component of the NHD and converting the remaining hydrologic units to the NHD model. Developers include private contractors, such as Titan/Avastar or Redcon, and the actual creators of the NHD.

HYDRO-LOGIC UNIT	NAME	% BLM	% FS	% Private	% Out of State*	Border State
16020309	Curlew Valley	45			64	Utah
17050102	Bruneau	62			24	Nevada
17050103	Succor Cr.	59			13	Nevada
17050104	Upper Owyhee	54			19	Nevada/Oregon
17050105	S.F Owhyee	12			83	Nevada/Oregon
17050106	E. Little Owhyee	9			90	Nevada/Oregon
17050107	Mid. Owhyee	15			80	Nevada/Oregon
17050108	Jordan	26			50	Oregon
17010216	Pend O'reille				97	Washington
17010308	Little Spokane				96	Washington
17050115	M. Boise/Payette			34	57	Oregon
17060103	Lower Snake-Asotin				96	Oregon
17060101	Hells Canyon		29	22	36	Oregon
17050201	Brownlee Reservoir		20	16	49	Oregon

*All percents for USFS, BLM, and Private are listed for the portion of the hydrologic unit within Idaho.

6.4 Data Maintenance

IDWR will be responsible for maintaining the data. IDFG will maintain the LLID portion.

6.5 Data Distribution

The data will be distributed on the INSIDE Idaho website. Changes will be posted as they are made.

6.6 Implementation Schedule

In order to complete the HR NHD, DLG data must be developed for those hydrologic units bordering Nevada. Once a complete set exists, those four hydrologic units can be converted to the NHD. The remaining hydrologic unit, shared with Utah, can be converted once a funding agreement is reached between the two states. The LLID model may be created as needed.

6.7 Cost Estimates

Utah estimated the costs for completing the NHD by quads. The 14 remaining hydrologic units encompass 502 7.5' quads. Approximately $527 per quad is required to complete the conversion process, totaling $264,554 (502 x $527) as of May 2, 2003.

Oregon and Washington are still tied to the LLID, and converting to the NHD may not be a priority for those states. Presently we have no agreement with Nevada. Approximately 80 quads in Nevada will have to be digitized in order to complete several border hydrologic units.

Other Costs
The creators of the NHD have not included names for canal and ditch features. These will have to be added at the state level. Given the importance of water in Idaho, these features are important as modeling tools and essential for mapping purposes.

7. RECOMMENDATIONS

7.1 Recommendations for Institutional and Financial Initiatives

We recommend seeking funding to complete the remaining 11 hydrologic units. Since Utah only has four reaming hydrologic units, they are anxious to complete the NHD. A funding agreement between Idaho and Utah is possible in the foreseeable future. IDWR is presently involved in applying for an Environmental Protection Agency "Network Readiness Grant." If the grant is awarded to IDWR, the money will be used to complete the HR NHD for Idaho.

7.2 Recommendations for Data Stewardship

IDWR will assume the state stewardship role. It will coordinate with other state agencies, counties, and federal agencies to insure a quality statewide coverage.

7.3 Recommendations for Legislative Initiatives

No legislative action is recommended.

7.4 Recommendations for Policy, Rule and Procedural Changes

No organizational rules or procedures are recommended.

7.5 Recommendations for Standards.

Data standards are posted:
Standards for National Hydrography Dataset - High Resolution Available at:
http://rmmcweb.cr.usgs.gov/public/nmpstds/acrodocs/draft/dlg-f/nhd/NHDH0799.PDF.

The Pacific Northwest River Reach standards are posted on:
http://www.streamnet.org/pnwr/PNWNAR.html.

8. PLAN UPDATE CYCLE

Once a complete NHD dataset is achieved for Idaho, the maintenance costs should be minimal. Presently the NHD is not able to incorporate changes in actual linework. As a result all changes will need to be held locally. Given the scope of the dataset, changes will be primarily made as mistakes are observed. In other words, rather than assigning the task of checking each line segment, Stewards and other Stakeholders will be asked to report mistakes as they use the data.